AASHTO T90-00
DETERMINING THE PLASTIC LIMIT
AND PLASTICITY INDEX OF SOILS

APPARATUS		
	Test 1	**Test 2**
1. Porcelain Dish or similar mixing dish, about 115 mm in diameter?		
2. Spatula or pill knife about 75 to 100 mm long and 20 mm wide?		
3. Rolling surface: (a) AASHTO Ground glass plate or smooth unglazed paper?		
4. Plastic limit rolling device (optional): (a) Made of acrylic? (b) Top plate and bottom fixed plate of suitable dimensions for properly rolling specimens? (c) Designed so top plate slides freely on side rails without wobbling? (d) Heights of side rails: AASHTO 3.20 ± 0.25 mm + thickness of unglazed paper attached to bottom plate?		
(e) Unglazed paper that does not add foreign matter (fibers, paper fragments) to soil during test attached to top and bottom plates (AASHTO only: attached by spray-on adhesive or self-adhesive backing)?		
5. Water Content Containers (a) Resistant to corrosion, disintegration, and weight change? (b) Close-fitting lids?		
6. Balance Class G1 [readable to 0.01 g]? **VTM – 7 a balance sensitive to 0.1 gram may be used.**		
7. Oven maintains 110±5°C (230±9°F)?		

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PROCEDURE		
Student must tell proctor under what circumstances 20 grams of –40 material is appropriate for use and when an 8 gram portion of –40 material would be used.	**Test 1**	**Test 2**
1. AASHTO: Sample is either about 20 g of minus 425-μm (No. 40) material obtained by T87 or T146, or about 8 g of liquid limit material?		
2. Sample was dried at 60°C (140°F)?		
3. If 20-g sample of dry material (AASHTO only): (a) Mixed with distilled or demineralized water in mixing dish? (b) Approximately 8-g ball formed?		
4. A 1.5 to 2-g portion of the 8-g ball selected and formed into ellipsoidal mass?		
5. Alternate procedure (using plastic limit rolling device): (a) Ellipsoidal mass placed on bottom plate and top plate placed in contact with mass? **Note:** More than one soil mass can be rolled simultaneously in the device. (b) Simultaneous downward force and back and forth motion applied to top plate so plate comes in contact with side rails within 2 minutes? (c) Soil thread not allowed to contact side rails during rolling?		
6. Mass rolled between fingers or palm and plate/paper (or between top and bottom plate of rolling device) to form 3-mm diameter thread?		
7. Rate of rolling between 80 to 90 strokes per minute (counting stroke as one complete motion of hand forward and back to the starting position)?		
8. Mass rolled for no more than two minutes to obtain thread diameter of 3 mm?		
9. When thread diameter is 3 mm, thread broken into several pieces?		
10. Pieces squeezed together between thumbs and fingers into ellipsoidal mass?		
11. Steps 4 through 9 repeated until thread crumbles and soil can no longer be rolled into a thread? **Note:** Crumbling may occur when thread diameter is greater than 3 mm.		

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PROCEDURE (continued)		
	Test 1	**Test 2**
11. Operator does not attempt to produce failure at exactly 3 mm diameter?		
12. Crumbled pieces placed in tared container and container immediately covered?		
13. AASHTO: Steps 3 through 12 repeated until the 8-g specimen is completely tested?		
14. Mass of specimen and container determined to 0.01 g? **VTM – 7 a balance sensitive to 0.1 gram may be used.**		
15. Specimen dried and water content determined according to T265?		
16. Plastic limit calculated from:? PL = mass of water x 100 / mass of oven dry soil		
18. Plastic limit reported to at least the nearest whole number?		
19. Plasticity index calculated from: PI = Liquid limit - Plastic limit?		
Comments:		

Date Tested:_____ **Person Assessed:**_____ **Assessor:**_____

Retest Date: _____ **Assessor:**_____